

Systematics of the South American genus *Plumarius* Philippi, 1873, with descriptions of new species (Hymenoptera, Plumariidae)

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ABSTRACT

This contribution presents the study of a first group of species of *Plumarius* Philippi, 1873, as the result of an extensive survey of the morphological variation present in males. The survey uncovered many useful characters to distinguish between the numerous species of the genus. The studied group consists of *Plumarius hirticornis* (André, 1909) and the following four new species: *Plumarius willinki* Fidalgo n. sp., *Plumarius filipalpis* Roig-Alsina n. sp., *Plumarius spiniferus* Roig-Alsina n. sp. and *Plumarius gradifrons* Diez n. sp. A characterisation of the group, descriptions and illustrations are provided. A lectotype is designated for *Konowiella hirticornis* André, 1909.

RÉSUMÉ

Systématique du genre sud-américain *Plumarius* Philippi, 1873, avec les descriptions de nouvelles espèces (Hymenoptera, Plumariidae).

Cette contribution présente l'étude d'un premier groupe d'espèces de *Plumarius* Philippi, 1873, comme résultat d'un examen étendu de la variation morphologique des mâles. L'étude a révélé beaucoup de caractères utiles pour distinguer les nombreuses espèces du genre. Le groupe étudié inclut *Plumarius hirticornis* (André, 1909) et les quatre espèces nouvelles suivantes : *Plumarius willinki* Fidalgo n. sp., *Plumarius filipalpis* Roig-Alsina n. sp., *Plumarius spiniferus* Roig-Alsina n. sp. et *Plumarius gradifrons* Diez n. sp. Le groupe est caractérisé et les espèces sont décrites et illustrées. Un lectotype est désigné pour *Konowiella hirticornis* André, 1909.

KEY WORDS
Chrysoidea,
Plumariidae,
Plumarius,
taxonomy,
morphology,
South America,
new species.

MOTS CLÉS
Chrysoidea,
Plumariidae,
Plumarius,
taxonomie,
morphologie,
Amérique du Sud,
espèces nouvelles.

INTRODUCTION

The family Plumariidae Bischoff, 1914 has been the subject of several recent contributions (Diez *et al.* 2007, 2010; Diez 2008; Diez & Roig-Alsina 2008) dealing with the description of new genera, the relationships of the genera within the family and the addition of new species to the until recently monotypic genus *Plumaroides* Brothers, 1974.

The family presently includes seven genera, four of which are monotypic: *Myrmecopterinella* Day, 1977, *Maplurius* Roig-Alsina, 1994, *Mapluroides* Diez, Fidalgo & Roig-Alsina, 2007 and *Pluroides* Diez, Roig-Alsina & Fidalgo, 2010. Two other genera have a few described species: *Myrmecopterina* Bischoff, 1914 (Enderlein 1914; Brues 1924) and *Plumaroides* (Diez 2008), while *Plumarius* Philippi, 1873 is a species-rich genus with twelve described species (Nagy 1973; Pérez D'Angelo 1974; Papp 2000; Penteado-Díaz & Scatolini 2003) and numerous undescribed species.

Plumariid wasps have a strong sexual dimorphism. Females are apterous, prognathous, have a flattened body and short legs with strong spiniform setae and stout femora (Evans 1966; Diez 2008), which suggest subterranean habits, although nothing is known on the biology of the group. Currently, a specimen described by Diez (2008) as the female of *Plumaroides tiphlus* Diez, 2008 has been attributed to Bethylidae Halliday, 1839 (Quintero & Cambra 2010). This matter is still under discussion, and further studies on morphology and molecular biology will determine the correct position of this specimen. Males are hypognathous, have long, slender legs and large wings with a characteristic venation, which includes an enormous pterostigma. Females are rarely collected, but males, which are attracted to lights at night, have accumulated in collections.

Plumariids occur in southern Africa and in South America, from Ecuador and Brazil to Chile and Argentina, with maximal diversity in the xeric regions of the latter two countries. Studies on the phylogeny of the family (Roig-Alsina 1994; Carpenter 1999; Diez *et al.* 2010; Brothers 2011) suggest two major lineages, both represented in the two continents. *Myrmecopterina* from South

Africa and *Plumarius* from South America are the sister-group to the remaining genera, of which *Myrmecopterinella* from Africa is the sister-group to the other four genera, all restricted to western and southern Argentina.

The distribution of *Plumarius* was discussed by Bradley (1972), who indicated its presence in Ecuador, Peru, Chile, Argentina and the state of Mato Grosso in Brazil. Recently Penteado-Díaz & Scatolini (2003) broadened the distribution of the genus, describing a new species from the state of Rio Grande do Norte, in northeastern Brazil and Quintero & Cambra (2010) reported the first record of the family Plumariidae from Paraguay.

The genus *Plumarius* and its type species *P. niger* were described by Philippi (1873) from Chile and attributed to the family Evaniiidae Hedicke, 1939. The genus was not recognised by other hymenopterists, and André (1909) described the new genus and species *Konowiella hirticornis* based on specimens from Mendoza, Argentina, communicated to him by W. Konow, but he was doubtful about the affinities of the new taxon, and did not assign it to any family. Later, André (1913) and Bischoff (1914) published two further new species under *Konowiella*. It was Bradley (1921) who called attention to the affinity of *Plumarius* and *Konowiella*, proposing the synonymy of the two genera. All these works were based on the study of males only. Evans (1966) described the female of *Plumarius* for the first time, but refused to name his specimens, because of the outstanding sexual dimorphism and difficulty in associating the sexes. Nagy (1973) presented a revision, based on male specimens, of the species described to that time and added five new species, three from Chile and two from Argentina. A second female was described by Pérez D'Angelo (1974) from Chile as *P. coquimbo*. Recently, two new species based on males have been described, one from Argentina (Papp 2000) and another from Brazil (Penteado-Díaz & Scatolini 2003).

The present contribution deals with the study of a first group of species, as the result of an extensive survey of the morphological variation present in male *Plumarius*, which has uncovered many useful characters to distinguish between its numerous species.

MATERIAL AND METHODS

All studied specimens are males.

Terminology follows that of previous contributions (Roig-Alsina 1994; Diez *et al.* 2010), except as explained below.

The posterior surface of the head presents an extensive genal bridge, which covers most of the oral cavity. The area covering the oral cavity is convex, allowing space for the mouthparts; this convexity is called the suboral swelling. The suboral swelling is usually separated from the preoccipital carina, sometimes connected to it by a narrow, tapering, extension of the swelling, or by a carina. The genal bridge in some species is separated from the malar area by a carina, called the genal carina (Fig. 1C). Most measurements of the head are taken in frontal view, placing the upper margin of the head and the apex of the clypeus in the same focal plane. A diagram of these measurements is presented in Figure 1A. The distance between the torulus and the lateral ocellus is measured from the upper margin of the socket to the nearest point on the lower margin of the ocellus (Fig. 1A, a). The distance between the torulus and the clypeus is measured from the lower margin of the socket to the midpoint of the epistomal suture (Fig. 1A, b). The position of the median ocellus on the face varies considerably among species. Its position is indicated with respect to an imaginary line uniting the upper margins of the toruli, called the supra-torular line (Fig. 1A, c). When the median ocellus is above this line, the distance from its lower margin to the line is compared to the maximum diameter of the ocellus. The length of the malar area is taken at the level of the anterior mandibular condyle (Fig. 1B). The area below the toruli down to the upper margin of the clypeus is called the supraclypeal area. The pronotum laterally, parallel to the posterior margin, bears a carina, running from the level of the pronotal lobe downwards, called the pronotal lateral carina (Fig. 1D). The hind trochanter of nearly all species, and the hind coxa of several species, bear ventrally a specialised area, the ventral setose area (Fig. 2). The nomenclature used for the wing venation is shown in Figure 1F (following Brothers 2011). The nomenclature used for the genitalia is shown in Figure 1E.

ABBREVIATIONS

Repositories

IADIZA	Instituto Argentino de Investigación de Zonas Aridas, Mendoza;
IFML	Instituto Fundación Miguel Lillo, Tucumán;
MACN	Museo Argentino de Ciencias Naturales "Bernardino Rivadavia", Buenos Aires;
MLP	Museo de La Plata, La Plata;
MNHN	Muséum national d'Histoire naturelle, Paris.

Description

cu-a	transverse vein;
DC	discal cell;
M	medial vein;
MC	marginal cell;
Rs3	third abscissa of radial sector vein;
Rs4	fourth abscissa of radial sector vein.

SYSTEMATICS

Order HYMENOPTERA Linnaeus, 1758

Family PLUMARIIDAE Bischoff, 1914

Genus *Plumarius* Philippi, 1873

REMARKS

The species-group treated in this contribution includes *P. hirticornis* (André, 1909) and four new species described below. The *hirticornis* species-group, as it is here defined, may not be monophyletic, but given the large diversity of *Plumarius* and the poor knowledge of its species, we have considered it a useful first step to delimit certain preliminary species-groups until a phylogenetic analysis is possible.

The group can be identified by the following combination of characters, which separate it from other species of *Plumarius*, including those already named.

1) The hind coxa bears on the under surface a specialised setose area. This area, at least in *P. hirticornis*, is lined internally with a layer of probably glandular tissue (Roig-Alsina 1994). With the exception of *P. spiniferus* Roig-Alsina n. sp., which only has a coxal setose area, other species of this group also bear a setose area on the ventral surface of the hind trochanter (Fig. 2). All other species of *Plumarius* known to us bear a setose area on the hind trochanter only.

2) The median ocellus is either crossed by the supra-torular line, or it is above this line by a distance shorter than the ocellar diameter. This feature excludes from the group *P. andrei* (Bischoff, 1931), *P. baloghi* Nagy, 1973, *P. brasiliensis* Penteado-Díaz & Scatolini, 2003, *P. niger* and *P. tumidulus* Papp, 2000, which have the median ocellus above the supra-torular line by a distance at least as long as the ocellar diameter.

3) The vertex is smooth and shiny, at most with weak punctures behind the lateral ocellus. This differs from *P. chilensis* Nagy, 1973 and *P. densepunctatus* Nagy, 1973, which have the vertex punctate or rugose.

4) The suboral swelling is well separated from the preoccipital carina, although sometimes connected to it by a ridge. This differs from *P. striaticeps* (André, 1913) in which the suboral swelling reaches the occipital carina.

5) The anterior surface of the scutum is sparsely to moderately punctate. This characteristic differs from *P. argentinus* Nagy, 1973, which has the anterior surface of the scutum densely, rugosely punctate.

Plumarius hirticornis (André, 1909)

(Fig. 3)

Konowiella hirticornis André, 1909: 107; 1913: 3, pl. I, fig. 11. — Enderlein 1914: 198. — Bischoff 1914: 61, 62.

Plumarius hirticornis — Bradley 1972: 137. — Nagy 1973: 259, 265. — Roig-Alsina 1994: 81.

TYPE MATERIAL. — Lectotype (by present designation): Argentina, “Mendoza / Amer. mer.”, “Rep. Arge”, “Konow”, “Museum Paris / collection / Ernest André / 1914”, “TYPE”, “Konowiella / hirticornis Er. André” (handwritten), “LECTOTYPE / Konowiella / hirticornis André / Townes 1977”, 1 ♂ (MNHN). Townes never published his intended designation. The second specimen of the type series, with the labels “Mendoza / Amer. mer.”, and “Konowiella / hirticornis cotype” (MNHN) is not conspecific with the lectotype, and is a specimen of *P. gradifrons* Diez n. sp., described below.

OTHER MATERIAL EXAMINED. — Argentina. Province of Mendoza, Nacuñán, II.1974, A. Roig-Alsina, 1 ♂ (MACN); 3.XII.1981, Claver, 1 ♂ (IADIZA). — Lavalle, El Retamo, 11.XII.1979, A. Roig-Alsina, 5 ♂♂ (MACN),

5 ♂♂ (MNHN). — Lavalle, Telteca, 25.IX-31.X.1995, 25.IX-5.XI.1996, 6.XI-3.XII.1996, 15.II-25.III.1996, Flores, A. Roig, 30 ♂♂ (IADIZA). — Ruta 7 km 1071 c. Cacheuta, 1200 m a.s.l., 13.XII.2006, P. A. Diez, G. Fidalgo, P. Fidalgo, 16 ♂♂ (MACN). — Province of San Juan, Encon, 15.XI.1982, A. Roig-Alsina, 7 ♂♂ (MACN). — 35 km N Marayes, 14.XI.1982, A. Roig-Alsina, 12 ♂♂ (MACN). — Valle del Zonda, 20.I.1982, A. Roig-Alsina, 1 ♂ (MACN). — Ruta 141 km 197 c. Caucete, 28.I.2006, P. Fidalgo, 2 ♂♂ (MACN). — Ruta 141 km 104 c. Marayes, 29.I.2006, P. Fidalgo, 1 ♂ (MACN). — Province of La Rioja, Mascarín, 23.XI.1941, Oglöblin, 2 ♂♂ (MLP). — Depto Belgrano, 1.II.1929, M. Gómez, 6 ♂♂ (MACN 23749). — Chelcos, 4.II.1981, A. Roig-Alsina, 1 ♂ (MACN). — La Rioja Capital, 6.III.1970, Porter, Stange, 48 ♂♂ (IFML); 26.X.1954, Hayward, 1 ♂ (IFML); 20 km N La Rioja, 24.IX.1968, Peña, 3 ♂♂ (IFML). — Patquia, Breyer, 3 ♂♂ (MACN 34720); Patquia, Guayapa, 14.X.1954, 18.X.1954, Hayward, 35 ♂♂ (IFML); Patquia, 26.I.1947, Hayward, 9 ♂♂ (IFML); Patquia, 25.I.1947, Hayward, Willink, 9 ♂♂ (IFML). — Ruta 60, between Mazan and Aimogasta, 17.I.1970, P. Fidalgo, 2 ♂♂ (IFML). — Las Cañas, 7.X.1954, Hayward, 1 ♂ (IFML). — 12 km SE Chilecito, 16-28.II.1969, Stange, Willink, Porter, 1 ♂ (IFML); Chilecito, 1.III.1969, Willink, Terán, Stange, 1 ♂ (IFML). — Santa Teresita, 5.I.2005, 12.II.2005, 19.II.2005, G. Fidalgo, P. Fidalgo, Torréns, 10 ♂♂ (MACN); 7 km N Santa Teresita, 18.II.2006, G. Fidalgo, P. Fidalgo, 3 ♂♂ (MACN). — Ruta 141 km 104 c. Marayes, 29.I.2006, P. Fidalgo, 3 ♂♂ (MACN). — 5 km S Udpinango, 16.III.2005, 3.XII.2005, 6 ♂♂ (MACN); Udpinando, 16.II.2006, Fidalgo 3 ♂♂ (MACN). — Ruta 141 c. Mascarín, 12.XII.2006, P. A. Diez, G. Fidalgo, P. Fidalgo, 6 ♂♂ (MACN). — Pinchas, 16.XI.2007, P. Fidalgo, 1 ♂ (MACN). — Ruta 27 between San Ramón and Valle Fétil, 14.XII.2006, 730 m a.s.l., P. A. Diez, G. Fidalgo, P. Fidalgo, 1 ♂ (MACN). — Province of Catamarca, Belén, 10 km E, Ruta 46, 3.XI.2005, P. Fidalgo, Porter, 5 ♂♂ (MACN); 12 km Belén, Ruta 46, 20.XII.2005, at light, P. A. Diez, P. Fidalgo, 15 ♂♂ (MACN). — Ruta 46, 12 km W Andalgalá, 18.III.2005, Torréns, P. Fidalgo, 12 ♂♂ (MACN). — Ruta 45 km 1280, c. Rio Colorado, 10.IV.2005, P. Fidalgo, 15 ♂♂ (MACN), 2 ♂♂ (MNHN). — Saujil, Fiambalá, 23.XI.2005, Porter, P. Fidalgo, P. A. Diez, 1 ♂♂ (MACN). — Medanitos, 9.IV.2005, at light, P. Fidalgo, 3 ♂♂ (MACN). — 5 km N Palo Blanco, 23-24.I.2007, 23-24.V.2007, P. A. Diez, P. Fidalgo, 9 ♂♂ (MACN). — Province of Santiago del Estero, km 511, 1934, M. Gómez, 1 ♂ (MACN).

DISTRIBUTION. — Argentina, provinces of Santiago del Estero, Catamarca, La Rioja, San Juan and Mendoza.

DIAGNOSIS. — Bigibbous aspect of face in lateral view, due to convex clypeus and convex supraclypeal area.

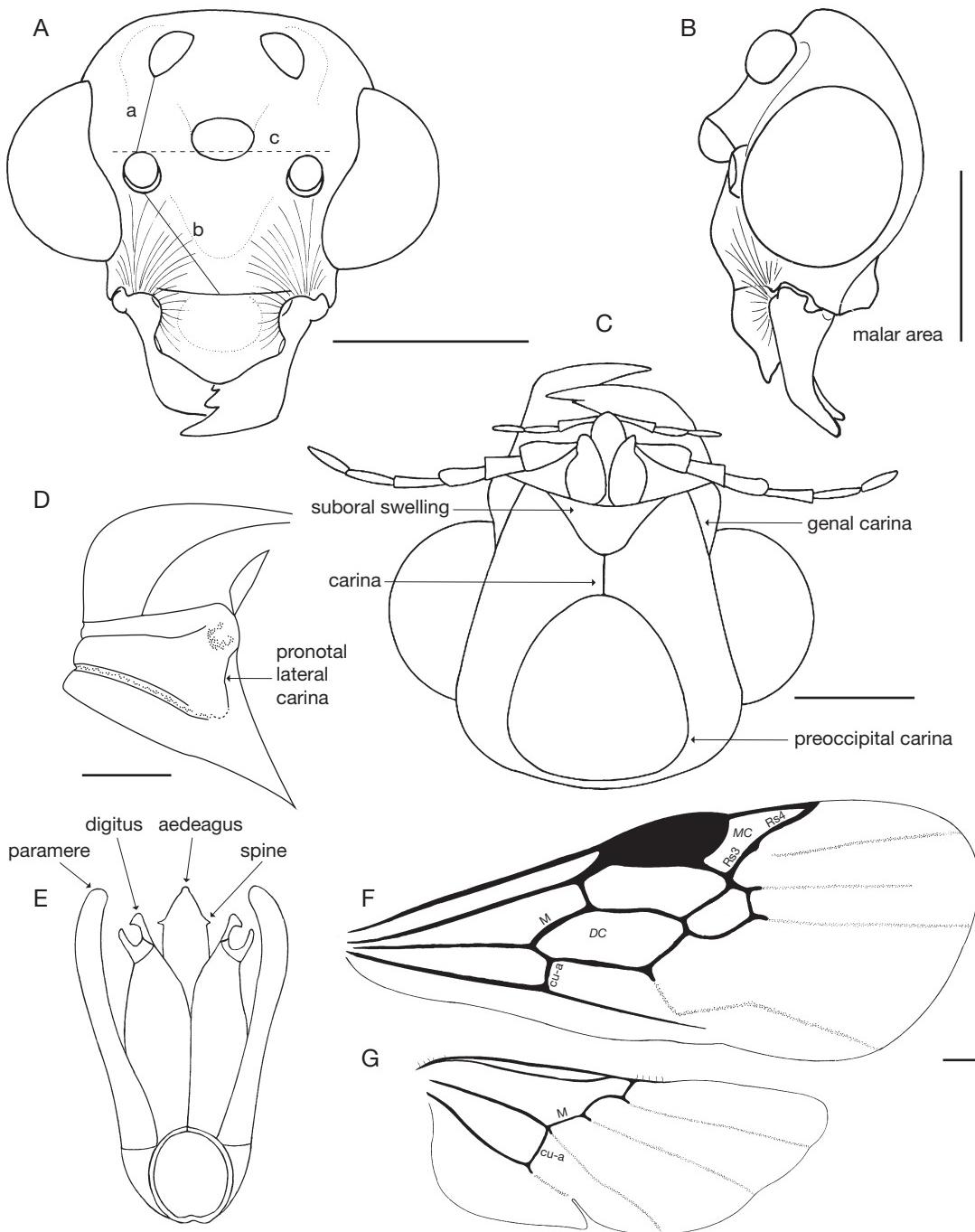


FIG. 1. — **A, B**, *Plumarius hirticornis* (André, 1909), lectotype; **A**, head, frontal view (**a**, distance between antennal socket and lateral ocellus; **b**, distance between antennal socket and clypeus; **c**, supra-torular line); **B**, head, lateral view; **C-F**, *Plumarius* sp.; **C**, head, ventral view; **D**, pronotum, lateral view; **E**, genital capsule, ventral view; **F**, wings (wing veins: **M**, **RS**; cells: **DC**, **MC**). Abbreviations: see Material and methods. Scale bars: 0.5 mm.

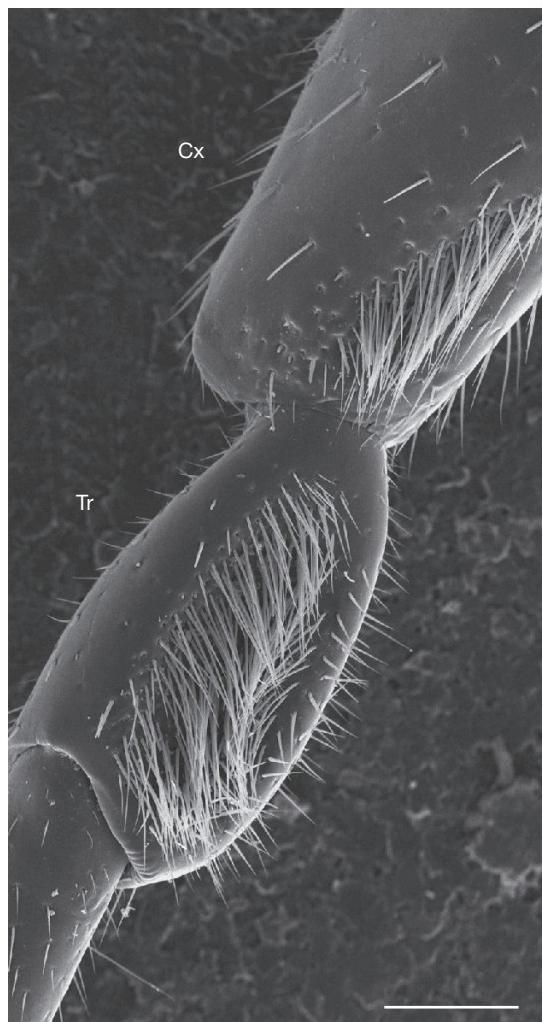


FIG. 2. — *Plumarius filipalpis* Roig-Alsina n. sp.: setose areas on hind coxa (Cx) and hind trochanter (Tr), ventral view. Scale bar: 0.1 mm.

REDESCRIPTION OF LECTOTYPE

Length: 10 mm. Colour pale brown, with darker head. Body with short, sparse, evenly distributed setae. Body moderately sculptured, with fine punctures on supraclypeal area and small, dense punctures on anterior surface of scutum.

Head

1.1× wider than high in frontal view. Inner margins of orbits converging ventrally. Ocellocular distance

1.0× diameter of lateral ocellus; postocellar distance 1.1× ocellocular distance. Antennocular distance 0.8× diameter of torulus; interantennal distance 5.0× antennocular distance. Vertex smooth, without striae, but with small punctures behind and between ocelli. Torulus closer to lateral ocellus than to clypeus (23:30). Lateral ocelli in frontal view below upper margin of head. Median ocellus crossed by supratorular line (Fig. 3A). Genal carina absent. Area between preoccipital carina and suboral swelling longer than length of swelling (1.3:1.1), without median longitudinal carina, but in larger specimens swelling continued by brief ridge (Fig. 3B). Malar area shorter than apical width of first flagellomere (7.0:9.5); with lateral striae. Supraclypeal area, in frontal view with striae and punctures on central region, and lateral striae evident; in lateral view gibbous (Fig. 3C). Epistomal suture distinct. Clypeus 1.1× wider than long, with lateral striae; with apico-lateral area scarcely bent forwards. Proportional lengths of segments of maxillary palp, from base to apex, 2:11:14:16:15:16 (first segment not measured). Scape basally rounded. First flagellomere 4.9× as long as apical width, its length shorter than sum of lengths of scape and pedicel (47:59).

Mesosoma

Pronotum with area anterior to pronotal lobe smooth, not forming lower pocket; pronotal lateral carina distinct. Notaulus scarcely marked, as long as admedian line, with evident punctures. Metapostnotum with longitudinal striae reaching posterior margin. Propodeum transverse, swollen behind spiracle. Forewing: marginal cell with anterior margin 3× as long as posterior margin; vein Rs_3 shorter than Rs_4 (16:24); vein M separated from $cu-a$ by 0.3× length of $cu-a$, discal cell rectangular. Pterostigma pilose. Hind wing: veins $cu-a$ and M interstitial. Forebasitarsus without outer lateral spines. Hind coxa and hind trochanter with ventral setose area; hind basitarsus 1.4× as long as middle basitarsus; inner hind tibial spur 1.2× as long as outer spur.

Metasoma

Genital capsule of lectotype not dissected, Figure 3D depicts genitalia of specimen from 7 km N of Santa Teresita, La Rioja. Aedeagus with apical lateral spines.

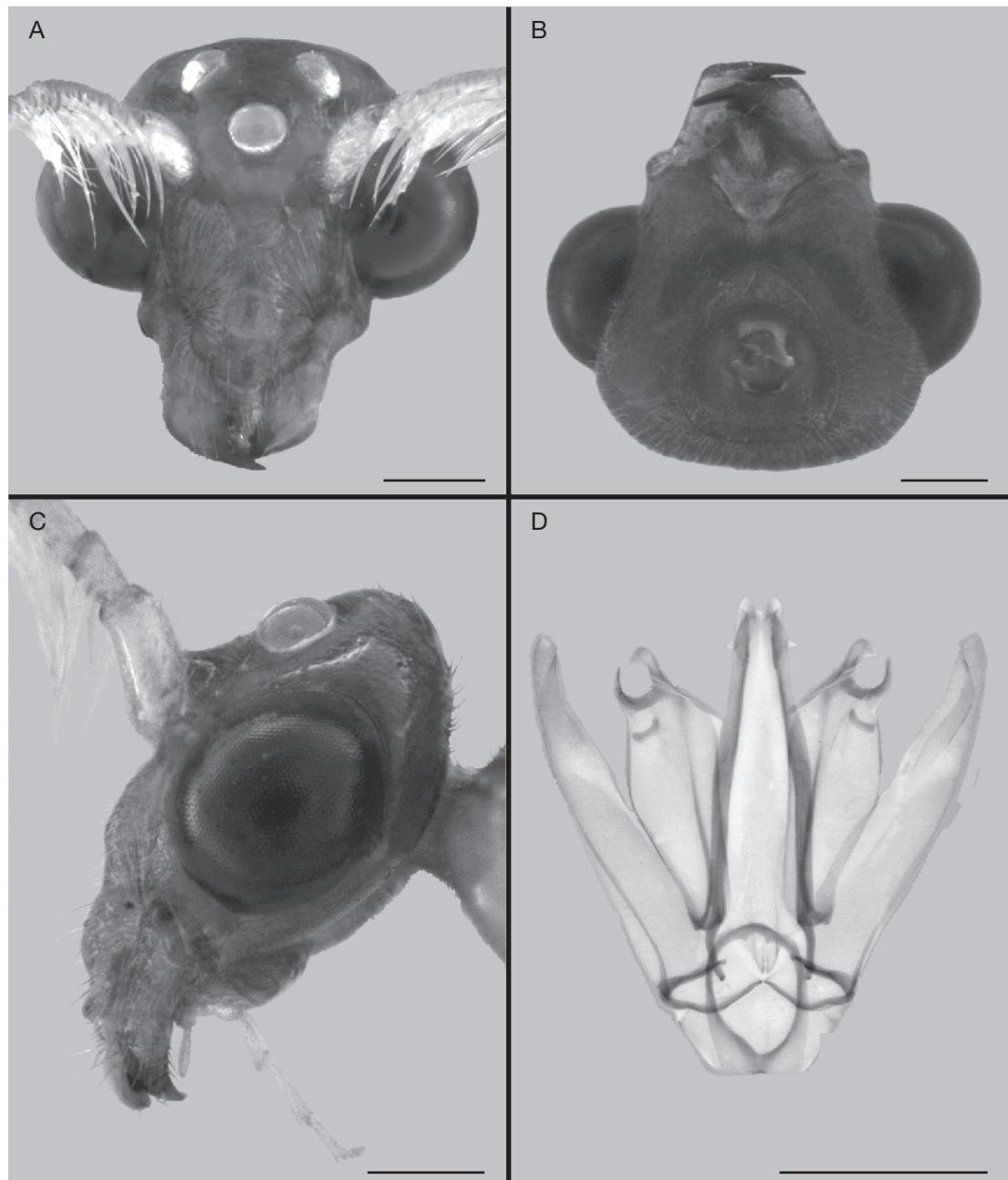


FIG. 3. — *Plumarius hirticornis* (André, 1909): A, B, paratype from the province of La Rioja, Santa Teresita, head, frontal view (A) and ventral view (B); C, paratype from Argentina, province of Mendoza, Lavalle, El Retamo, head, lateral view; D, genital capsule, ventral view. Scale bars: 0.5 mm.

VARIATION

Length: 7.0–12.0 mm. In some specimens the setose area on the hind coxa is reduced to a rather narrow line of hairs. The distance between M and cu-a on the forewing varies from 0.2× to 0.6× the length of cu-a.

Plumarius willinki Fidalgo n. sp. (Fig. 4)

TYPE MATERIAL. — Holotype: Argentina, province of Mendoza, Dique El Nihuil, 10.I.1980, at light, Willink, P. Fidalgo, Claps, Domínguez, 1 ♂ (IFML).

Paratypes: same data as holotype, 10 ♂♂ (IFML), 2 ♂♂ (MNHN), 2 ♂♂ (MACN).

TYPE LOCALITY. — Argentina, province of Mendoza, Dique El Nihuil.

DISTRIBUTION. — Argentina, province of Mendoza.

ETYMOLOGY. — The species is named after Abraham Willink, distinguished Argentinean hymenopterist.

DIAGNOSIS. — Large ocelli reaching upper margin of head in frontal view; triangular, apically pointed seventh tergum.

DESCRIPTION OF HOLOTYPE

Length: 5.0 mm (paratypes: 4.1–6.6 mm). Colour light brown with the head mostly dark. Body with short, sparse, evenly distributed setae; weakly sculptured.

Head

1.2× wider than high in frontal view; wider in dorsal view than width of scutum between tegulae (47:44). Inner margin of orbits converging ventrally. Ocellocular distance 0.6× diameter of lateral ocellus; postocellar distance 2.0× ocellocular distance. Antennocular distance 0.6× diameter of torulus; interantennal distance 5.7× antennocular distance. Vertex smooth, without striae or punctures anteriorly and weakly punctate behind lateral ocellus. Torulus closer to lateral ocellus than to clypeus (10:17). Lateral ocelli in frontal view reaching upper margin of head. Median ocellus crossed by supra-torular line (Fig. 4A). Genal carina present, distinct. Length of area between

preoccipital carina and suboral swelling shorter than length of swelling (8:11); this area without median longitudinal carina (Fig. 4B). Malar area longer than apical width of first flagellomere (15:8), finely striate anteriorly. Supraclypeal area in frontal view with lateral striae extending to above upper level of torulus; medially with rounded, smooth elevation without striae and punctate. Epistomal suture evident. Clypeus 1.4× wider than long, with lateral striae; with apico-lateral area scarcely bent forwards; apically not truncate; in lateral view weakly rounded medially (Fig. 4C). Proportional lengths of segments of maxillary palp, from base to apex, 15:10:15:14:12:15. Scape without basal swelling or projection. First flagellomere 5.7× as long as apical width, its length subequal to sum of lengths of scape and pedicel (32:33).

Mesosoma

Area anterior to pronotal lobe with weak striae; pronotal lateral carina distinct, forming lower pocket. Notaulus weakly marked, as long as admedian line. Anterior surface of scutum without striae, weakly punctate. Metapostnotum with fine longitudinal striae reaching posterior margin. Propodeum transverse, swollen behind spiracle. Forewing: marginal cell with anterior margin 2.1× as long as posterior margin; length of veins Rs3 and Rs4 subequal (25:26); vein M separated from cu-a by 0.2× length of cu-a; discal cell rectangular. Pterostigma pilose. Hind wing: veins cu-a and M interstitial. Forebasitarsus with five outer lateral spines. Hind coxae and hind trochanter with ventral setose areas; length of middle basitarsus and hind basitarsus subequal (31:34); inner hind tibial spur 1.2× as long as outer spur.

Metasoma

Seventh tergum triangular, apically pointed. Genitalia as Figure 4D, aedeagus with apical lateral spines.

VARIATION

In some specimens the dark brown colour of the head is restricted to an area on the vertex. Other specimens have a dark brown metasoma. The distance between M and cu-a on the forewing varies from 0.2× to 0.3× the length of cu-a.

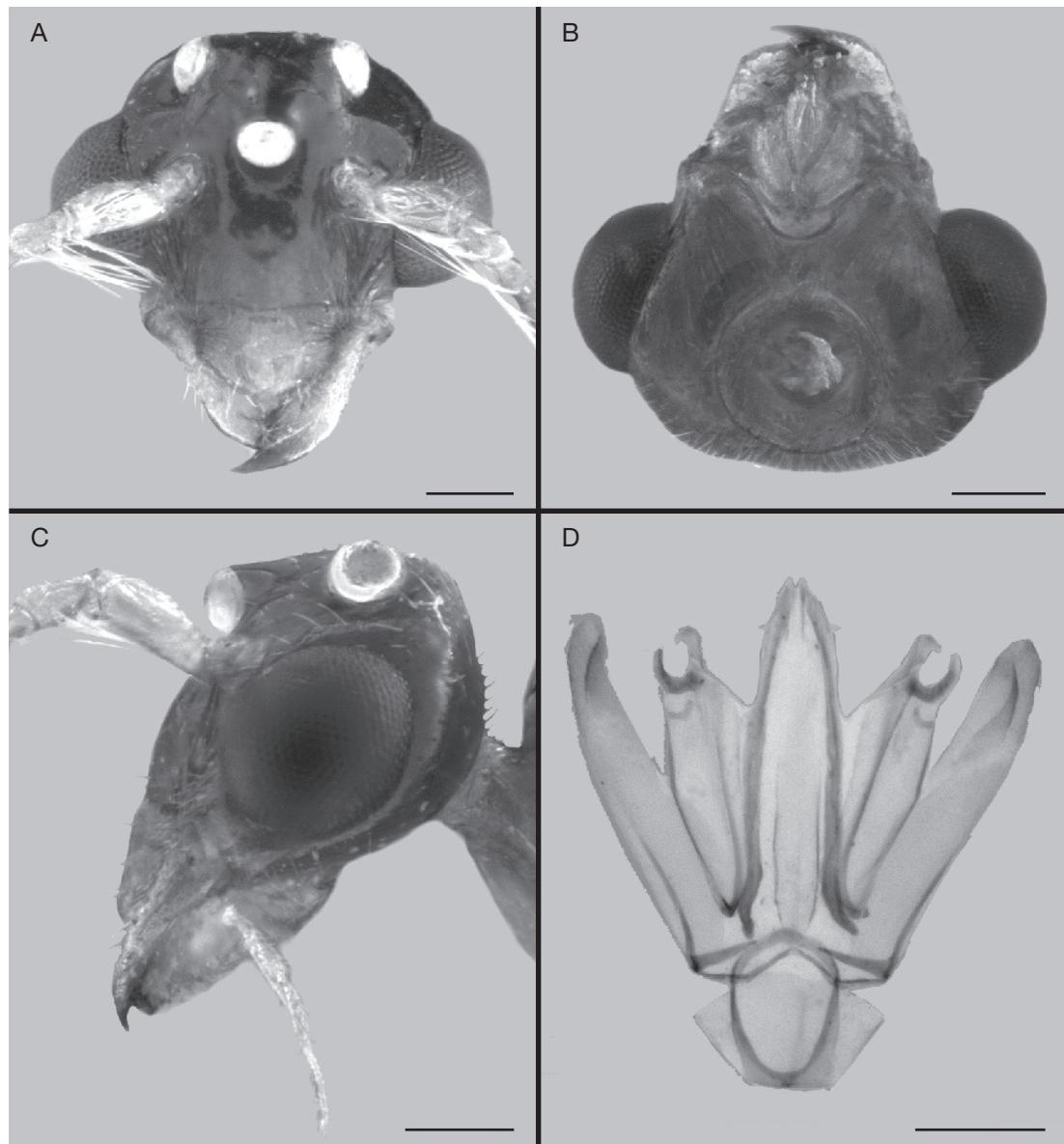


FIG. 4. — *Plumarius willinki* Fidalgo n. sp., paratype from Argentina, province of Mendoza, Dique El Nihuil: **A**, head, frontal view; **B**, head, ventral view; **C**, head, lateral view; **D**, genital capsule, ventral view. Scale bars: 0.5 mm.

Plumarius filipalpis Roig-Alsina n. sp.
(Fig. 5)

TYPE MATERIAL. — Holotype: Argentina, province of San Juan, Paso del Agua Negra, 3250 m a.s.l., 22.I.1982, A. Roig-Alsina, 1 ♂ (MACN en-9890).
Paratypes: Peru. Puno, Sillustani, 12.X.1983, A. Roig-

Alsina, 1 ♂ (MACN).

Argentina. Province of Jujuy, Agua de Castilla, 25.XI.1981, A. Roig-Alsina, 5 ♂♂ (MACN), 2 ♂♂ (MNHN). — Province of Salta, Cobres, 3800 m a.s.l., X.1988, Genise, 3 ♂♂ (MACN). — Recta Tin Tin E. Cachi, 2700 m a.s.l., 18.X.1968, Peña, 4 ♂♂ (IFML). — Province of La Rioja, 20 km N La Rioja, 24.IX.1968, Peña, 1 ♂ (IFML).

TYPE LOCALITY. — Argentina, province of San Juan, Paso del Agua Negra.

DISTRIBUTION. — Argentina, provinces of Salta, Jujuy, La Rioja and San Juan, and Peru, department of Puno.

ETYMOLOGY. — The name of this species refers to its slender, long maxillary palps.

DIAGNOSIS. — Slender, long segments of maxillary palps.

DESCRIPTION OF HOLOTYPE

Length: 9.9 mm (paratypes: 6.0-9.9 mm). Colour dark brown, with light brown antennae and legs. Body with short, sparse, evenly distributed setae. Species weakly sculptured.

Head

1.1× wider than high in frontal view; in dorsal view narrower than width of scutum between tegulae (49:57). Inner margin of orbits converging ventrally. Ocellocular distance 1.2× diameter of lateral ocellus; postocellar and ocellocular distances equal. Antennocular distance 0.7× diameter of torulus; interantennal distance 3.0× antennocular distance. Vertex smooth, without striae or punctures anteriorly, and weakly punctate behind lateral ocellus. Torulus closer to lateral ocellus than to clypeus (8:20). Lateral ocelli in frontal view below upper margin of head. Median ocellus crossed by supra-torular line (Fig. 5A). Genal carina present, distinct. Length of area between preoccipital carina and suboral swelling subequal to length of swelling (7:8); this area bearing median longitudinal carina (Fig. 5B). Malar area longer than apical width of first flagellomere (20:12), striate anteriorly. Supraclypeal area in frontal view, with lateral striae extending to above upper level of torulus; medially with rounded elevation without punctures or striae. Epistomal suture evident. Clypeus 1.3× wider than long, with lateral striae; with apico-lateral area bent forwards; apically truncate; in lateral view, weakly rounded medially (Fig. 5C). Proportional lengths of segments of maxillary palp, from base to apex, 10:10:15:25:23:20. Scape without basal swellings or projections. First flagellomere 8.0× as long as apical width, its length subequal to sum of lengths of scape and pedicel (32:33).

Mesosoma

Area anterior to pronotal lobe smooth; pronotal lateral carina distinct, forming lower pocket. Notaulus

marked, as long as admedian line, with evident punctures around notaulus and between notaulus and admedian line; anterior margin of scutum aciculate. Metapostnotum with fine longitudinal striae reaching posterior margin. Propodeum transverse, swollen behind spiracle. Forewing: marginal cell with anterior margin 2.3× as long as posterior margin; vein Rs3 shorter than Rs4 (32:35); vein M separated from cu-a by 0.3× length of cu-a; discal cell rectangular. Pterostigma with median scarcely pilose area. Hind wing: veins cu-a and M interstitial. Forebasitarsus without outer lateral spines. Hind coxa and hind trochanter with ventral setose areas; hind basitarsus 1.3× as long as middle basitarsus; inner hind tibial spur 2.1× as long as outer spur.

Metasoma

Genitalia as in Figure 5D; aedeagus with apical lateral spines.

VARIATION

Specimens from Peru and Jujuy have a pale spot between the upper margin of the toruli and the median ocellus. The anterior margin of the clypeus varies from rather truncate to roundly produced. The median longitudinal carina between the preoccipital carina and the suboral swelling is weak to absent in some specimens from Salta. The mesoscutum presents distinct, large punctures between and around the notauli; in some specimens (Puno, La Rioja and Cachi) this punctuation is extended laterally, but away from the anterior margin. The distance between M and cu-a on the forewing varies from 0.1× to 0.5× the length of cu-a. Most specimens come from high altitudes in the Andes mountains, except a specimen from La Rioja.

Plumarius spiniferus Roig-Alsina n. sp. (Fig. 6)

TYPE MATERIAL. — Holotype: Argentina, province of La Rioja, Anguiñán, Chilcito, 1-15.II.1969, Malaise trap, Willink, Terán, Stange, 1 ♂ (IFML). Paratypes: same data as holotype, 1-15.XII.1969, 16-31.V.1969, 3 ♂♂ (IFML). — Patquia, Guayapa, 4.X.1954, Hayward, 1 ♂ (MACN). — Province of Catamarca, Ruta 46, km 66 between Belén and Andalgala,

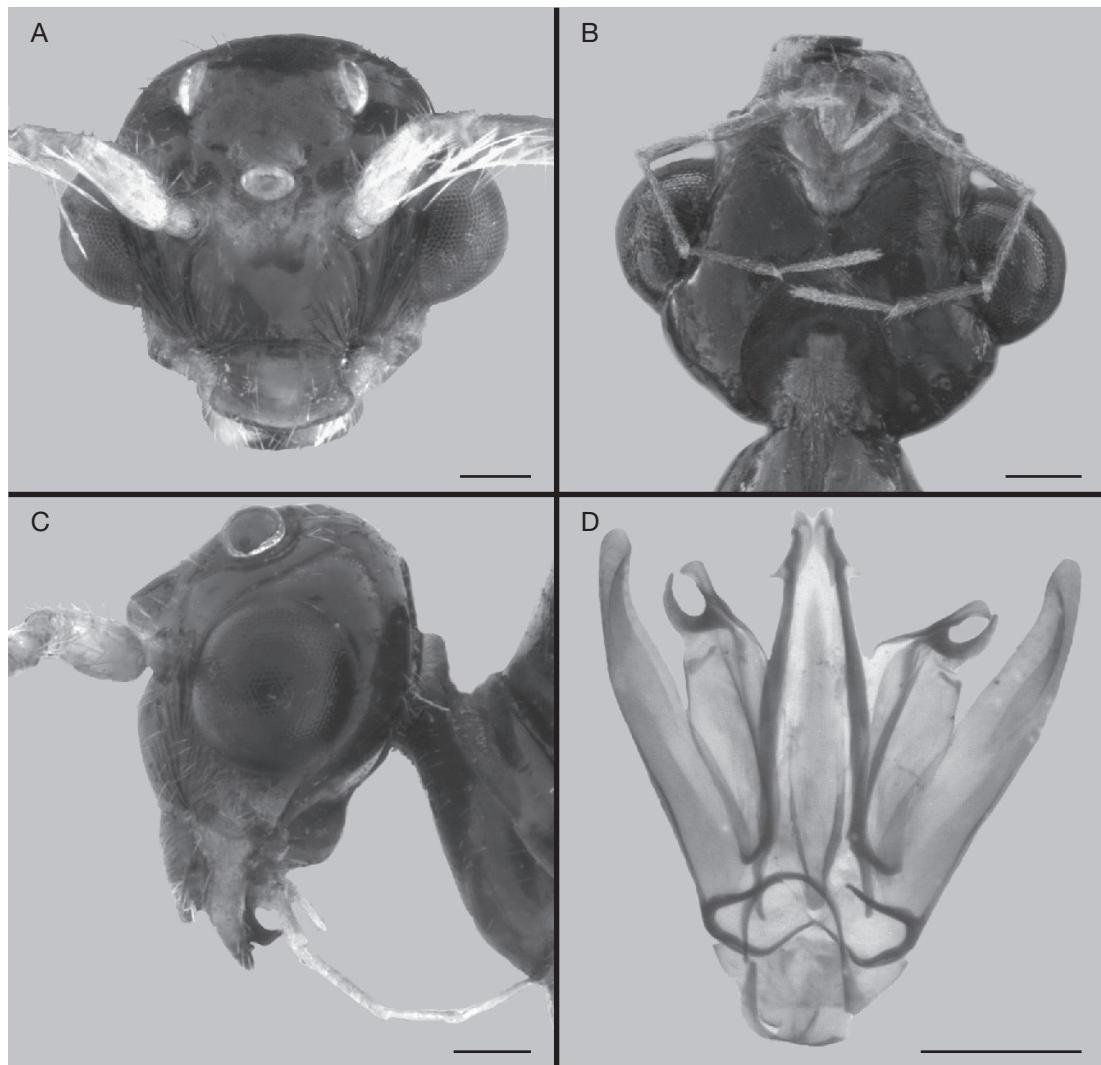


FIG. 5. — *Plumarius filipalpis* Roig-Alsina n. sp.: **A**, paratype from the province of Jujuy, Agua de Castilla, head, frontal view; **B**, paratype from Peru, Puno, Sillustani, head, ventral view; **C**, paratype from the province of Jujuy, Agua de Castilla, head, lateral view; **D**, genital capsule, ventral view. Scale bars: 0.5 mm.

2.II.2006, P. A. Diez, P. Fidalgo, 8 ♂♂ (MACN), 2 ♂♂ (MNHN), 2 ♂♂ (MLP), 2 ♂♂ (IADIZA). — Andalgalá, 24.XII.1971, at light, D. Brothers, 1 ♂ (MACN).

TYPE LOCALITY. — Argentina, province of La Rioja, Anguiñán.

DISTRIBUTION. — Argentina, provinces of La Rioja and Catamarca.

ETYMOLOGY. — The name of this species refers to the ventro-basal spiniform projection of the scape.

DIAGNOSIS. — Scape with basal spiniform projection; lack of apical lateral spines on aedeagus; large median ocellus, placed above supra-torular line.

DESCRIPTION OF HOLOTYPE

Length: 6.5 mm (paratypes: 4.5-7.6 mm). Colour dark brown, with mandibles, antennae and legs light

brown. Body with short, sparse, evenly distributed setae. Species weakly sculptured.

Head

1.4× wider than high in frontal view; width, in dorsal view, subequal to width of scutum between tegulae (31:32). Inner margin of orbits converging ventrally. Ocellocular distance 1.5× diameter of lateral ocellus; postocellar distance 0.9× ocellocular distance. Antennocular distance 1.0× diameter of torulus; interantennal distance 2.8× antennocular distance. Vertex smooth, without striae or punctures anteriorly, and weakly punctate behind lateral ocellus. Torulus closer to lateral ocellus than to clypeus (1.3:1.5). Lateral ocelli in frontal view below upper margin of head. Median ocellus above supra-torular line by 0.8× its maximum diameter (Fig. 6A). Genal carina present, distinct. Length of area between preoccipital carina and suboral swelling subequal to length of swelling (11:10); this area without median longitudinal carina (Fig. 6B). Malar area longer than apical width of first flagellomere (17:10), finely striate anteriorly. Supraclypeal area in frontal view, with lateral striae extending to above upper level of torulus; medially with rounded elevation with striae and evident punctures. Epistomal suture distinct. Clypeus 1.2× wider than long, with lateral striae; with apico-lateral area scarcely bent forwards; apically not truncate. Proportional lengths of segments of maxillary palp from base to apex, 15:10:15:14:12:15. Scape with a ventral-basal spiniform projection (Fig. 6C). First flagellomere 2.8× as long as apical width, its length shorter than sum of lengths of scape and pedicel (25:29).

Mesosoma

Area anterior to pronotal lobe smooth; pronotal lateral carina distinct, not forming lower pocket. Notaulus weakly marked, as long as admedian line. Anterior surface of scutum weakly striate and punctate. Metapostnotum with fine longitudinal striae reaching posterior margin. Propodeum transverse, swollen behind spiracle. Forewing: marginal cell with anterior margin 2.6× as long as posterior margin; vein R_s3 longer than $Rs4$ (30:35); vein M separated from $cu-a$ by 0.4× length of $cu-a$; discal cell rectangular. Pterostigma pilose. Forebasitarsus

without outer lateral spines. Hind coxa and hind trochanter with ventral setose areas; hind basitarsus 1.4× as long as middle basitarsus; inner hind tibial spur 2.0× as long as outer spur.

Metasoma

Genitalia as in Figure 6D; aedeagus without apical lateral spines.

VARIATION

The specimen from Patquia lacks striae on the supraclypeal area, which is sparsely punctate and smooth between punctures.

Plumarius gradifrons Diez n. sp.

(Fig. 7)

TYPE MATERIAL. — Holotype: Argentina, province of La Rioja, Patquia, Breyer, 1 ♂ (MACN en-9891). Paratypes: Argentina, Province of Rio Negro, San Antonio Oeste, 14.I.1968, Stange, 3 ♂♂ (IFML). — General Fernandez Oro, 17.I.1980, Willink, P. Fidalgo, Domínguez, Claps, 3 ♂♂ (IFML). — Province of Neuquén, Picún-Leufú, 30.XI.1985, A. Roig-Alsina, 4 ♂♂ (MACN). — Province of Mendoza, Lavalle, El Retamo, 11.XII.1979, A. Roig-Alsina, 41 ♂♂ (MACN), 10 ♂♂ (MNHN); Ruta 7 km 1071 c. Cacheuta, 1200 m a.s.l., 13.XII.2006, P. A. Diez, G. Fidalgo, P. Fidalgo, 6 ♂♂ (MACN). — Province of San Juan, Ruta 141 km 173 c. Caucete, 14.I.2006, at light, P. Fidalgo, 15 ♂♂ (MACN); Ruta 141 km 197 c. Caucete, 28.I.2006, P. Fidalgo, 78 ♂♂ (MACN). — Province of Córdoba, Yacanto, 23.II.1966, Stange, 2 ♂♂ (IFML). — Province of La Rioja, 20 km N La Rioja, 24.IX.1968, Peña, 9 ♂♂ (IFML). — Patquia, Guayapa, 4.X.1954, 14.X.1954, 18.V.1954, Hayward, 35 ♂♂ (IFML); Patquia, 25-26.I.1947, Hayward, Willink, 9 ♂♂ (IFML); Patquia, Breyer, 3 ♂♂ (MACN 34612, 34615, 34720). — Illiar, 1934, M. Gómez, 12 ♂♂ (MACN). — Anguiñán, Chilecito, 1-15.II.1969, Malaise trap, Willink, Terán, Stange, 1 ♂ (IFML); Chilecito, 1.II.1969, Willink, Terán, Stange, 1 ♂ (IFML); Ruta 40 km 593 c. Chilecito, 7.IV.2005, G. Fidalgo, P. Fidalgo, Torréns, 10 ♂♂ (MACN). — La Rioja Capital, 6.III.1970, Porter, Stange, 1 ♂ (IFML). — Ruta 66 between Mazán and Aimogasta, 17.I.1970, P. Fidalgo, 1 ♂ (IFML). — 5 km S of Udpinango, III.2005, 3.XII.2005, G. Fidalgo, P. Fidalgo, 11 ♂♂ (MACN); same location, but 16-25.III.2005, P. Fidalgo, P. A. Diez, 19 ♂♂ (MACN). — Udpinango, 16.II.2006, I.2007, Torréns, Nieto, P. Fidalgo, 14 ♂♂ (MACN). — Termas de Santa Teresita, 12.II.2005, 19.II.2005, XI.2006, P. Fidalgo, Torréns, 12 ♂♂ (MACN).

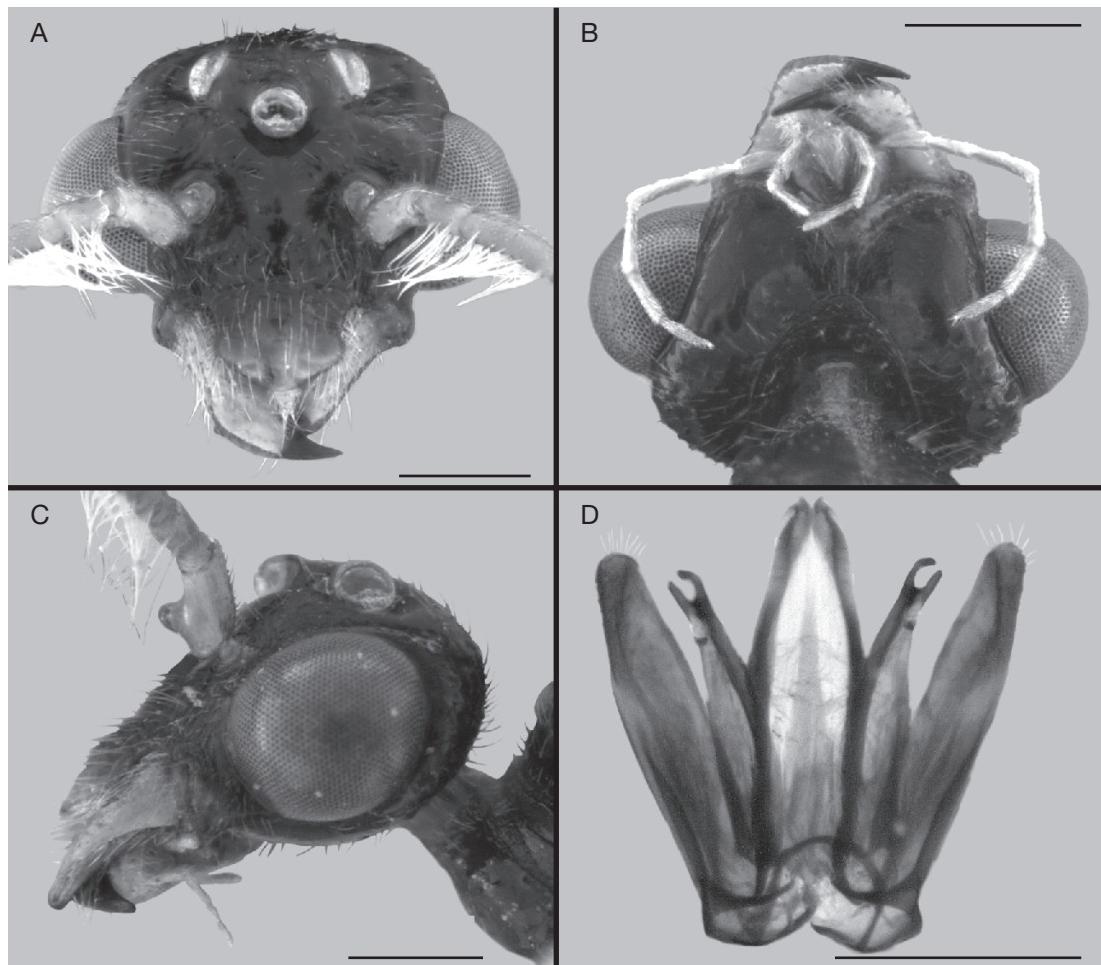


FIG. 6. — *Plumarius spiniferus* Roig-Alsina n. sp.: **A**, paratype from Argentina, province of La Rioja, Anguiñán, Chilecito, head, frontal view; **B**, holotype, head, ventral view; **C**, another paratype from Argentina, province of La Rioja, Anguiñán, Chilecito, head, lateral view (the structure is spiniform, but the profile photo does not show well); **D**, genital capsule, ventral view. Scale bars: 0.5 mm.

16 ♂♂ (MACN). — Ruta 141 km 104 c. Marayes, 29.I.2006, at light, P. Fidalgo, 29 ♂♂ (MACN). — Ruta 141 c. Mascasín, 12.XII.2006, P. A. Diez, G. Fidalgo, P. Fidalgo, 43 ♂♂ (MACN). — Pinchas, 16.XI.2007, P. Fidalgo, 13 ♂♂ (MACN). — El Barrial, 17.II.2006, Torréns, P. Fidalgo, 3 ♂♂ (MACN). — Province of Catamarca, Belén, 6.II.1966, Willink, Stange, 1 ♂ (MACN). — Saujil, Tinogasta, 11.I.1970, P. Fidalgo, 1 ♂ (MACN). — Cuesta de Belén, 26.III.1969, Baurero, Paganini, 1 ♂ (IFML). — 6 km N of Belén, 16-30.IX.1968, 1240 m a.s.l., Malaise trap, Willink, Terán, Stange, 1 ♂ (IFML). — Los Nacimientos de Abajo, 1-31.X.1968, 16-28.II.1969, Malaise trap, Willink, Terán, Stange, 84 ♂♂ (IFML). — 4 km N of Santa María,

1700 m a.s.l., 4.X.1968, Willink, Terán, Stange, 1 ♂ (IFML). — c. Saujil (Fiambalá), 23.XI.2005, at light, Porter, P. Fidalgo, P. A. Diez, 23 ♂♂ (MACN). — 10 km N Fiambalá, 8.II.2006, yellow pan trap, 16.II.2007, P. Fidalgo, P. A. Diez, 7 ♂♂ (MACN). — Belén, 10 km E Ruta 46, 3.XI.2005, Porter, P. Fidalgo, 22 ♂♂ (MACN). — Ruta 46, 12 km of Belén, 20.XII.2005, P. Fidalgo, P. A. Diez, 12 ♂♂ (MACN). — Ruta 46, 12 km W Andalgalá, 28.III.2005, Torréns, P. Fidalgo, 1 ♂ (MACN). — Ruta 45 km 1280, c. Rio Colorado, 10.IV.2005, P. Fidalgo, 13 ♂♂ (MACN). — c. Amaicha del Vallle, Ruta 307 km 122, XI.2005, P. Fidalgo, Porter, 6 ♂♂ (MACN). — Medanito, 9.IV.2005, Fidalgo, 1 ♂ (MACN). — 5 km N Palo Blanco,

23-24.I.2007, P. Fidalgo, P. A. Diez, 9 ♂♂ (MACN). — Province of Tucumán, Amaicha, 20.XI.1966, Stange, 3 ♂♂ (IFML). — Between Amaicha and Santa María, 28.XI.2005, Torréns, P. Fidalgo, 8 ♂♂ (MACN). — Province of Salta, Cafayate, 20.XII.1970, Stange, 1 ♂ (IFML). — Yacochuya, 9 km NW Cafayate, 23-26.IV.1970, Stange, Porter, 1 ♂ (IFML). — Yacochuya, Cafayate, 16-30.IX.1968, Willink, Terán, Stange, 10 ♂♂ (IFML). — El Barrial c. San Carlos, 30.XI.1981, A. Roig-Alsina, 4 ♂♂ (MACN). — Province of Jujuy, 20 km N Capital, 24.IX.1968, Peña, 1 ♂ (IFML).

OTHER MATERIAL EXAMINED. — *Plumarius hirticornis*: “Mendoza / Amer. mer.”, “Konowiella / hirticornis cotype” (MNHN), paralectotype.

TYPE LOCALITY. — Argentina, province of La Rioja, Patquia.

DISTRIBUTION. — Argentina, from the province of Salta in the north to the province of Río Negro in the south.

ETYMOLOGY. — The name of this species refers to the step-like protuberance of the supraclypeal area in lateral view.

DIAGNOSIS. — Setose areas on both hind coxa and trochanter, step-like protuberance of supraclypeal area.

DESCRIPTION OF HOLOTYPE

Length: 6.0 mm (paratypes: 4.4-8.6 mm). Colour pale brown with head and antennae distinctly darker. Species sparsely punctate.

Head

1.2× wider than high in frontal view; wider in dorsal view than width of scutum between tegulae (49:45). Inner margin of orbits converging ventrally. Ocellocular distance 0.9× diameter of lateral ocellus; postocellar distance 1.7× ocellocular distance. Antennocular distance 0.6× diameter of torulus; interantennal distance 5.5× antennocular distance. Vertex smooth, without striae or punctures. Torulus closer to lateral ocellus than to clypeus (10.5:20). Lateral ocelli in frontal view below upper margin of head. Median ocellus above supra-torular line by 0.3× its maximum diameter (Fig. 7A). Genal carina present, distinct. Length of area between preoccipital carina and suboral swelling subequal to length of swelling (1.1:1.2); this area without median longitudinal carina (Fig. 7B). Malar area longer than width of first flagellomere (1.2:0.9),

without striae. Supraclypeal area, in frontal view, with distinct lateral striae and central smooth elevated area; in lateral view with step-like protuberance (Fig. 7C). Epistomal suture distinct. Clypeus 1.5× wider than long, with lateral striae; with apico-lateral area scarcely bent forwards. Proportional lengths of segments of maxillary palp from base to apex, ?:10:15:14:9:10. Scape basally with ventral rounded, compressed expansion (Fig. 7C). First flagellomere 5.8× as long as apical width, longer than sum of lengths of scape and pedicel (34:29).

Mesosoma

Area anterior to pronotal lobe smooth, not forming lower pocket; pronotal lateral carina distinct. Notaulus marked, as long as admedian line; anterior surface of scutum weakly punctate. Metapostnotum without longitudinal striae reaching posterior margin. Propodeum transverse, swollen behind spiracle. Forewing: marginal cell with anterior margin 2.4× as long as posterior margin; vein Rs3 shorter than Rs4 (17:22); vein M separated from cu-a by 0.4× length of cu-a, discal cell rectangular. Hind wing: veins cu-a and M interstitial. Forebasitarsus without outer lateral spines. Hind coxa and hind trochanter with ventral setose areas; hind basitarsus 1.3× as long as middle basitarsus; inner hind tibial spur 1.3× as long as outer spur.

Metasoma

Genitalia as in Figure 7D; aedeagus with apical lateral spines.

VARIATION

The body colour varies considerably in this species. Pale brown specimens with a dark brown head are common, but some specimens are entirely pale and some others entirely dark brown. The apex of the clypeus in some specimens is slightly notched. The ventral setose areas of the hind coxa and the hind trochanter are sometimes less distinct.

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FIG. 7. — *Plumarius gradifrons* Diez n. sp.: **A, B**, paratype from the province of San Juan, Ruta 141 km 173 c. Caucete, head, frontal view (**A**) and ventral view (**B**); **C**, paratype from the province of La Rioja, 5 km S of Udpinango, head, lateral view; **D**, genital capsule, ventral view. Scale bars: 0.5 mm.

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